

WHAT IS CLAIMED IS:

1. A method for temporarily placing a data storage unit within a redundant data storage system having a plurality of data storage units disposed in at least one logical volume in an off-line condition, which comprises the steps of:

5 placing a selected data storage unit in an off-line condition for a period of time;

 storing data directed to the logical volume in which the selected data storage unit is disposed in a logging repository disposed outside of the logical volume in which the selected data storage unit is disposed during the period of time;

10 detecting a failure in a data storage unit other than the selected data storage unit in the logical volume in which the selected data storage unit is disposed;

 placing the selected data storage unit in an on-line condition following the period of time;

15 downloading data stored in the logging repository onto the selected data storage unit;

 allowing data directed to the logical volume in which the selected data storage unit is disposed to be stored in the logical volume in which the selected data storage unit is disposed; and

20 updating redundant data within the logical volume in which the selected data storage unit is disposed.

2. The method of claim 1, wherein the selected data storage unit is placed in an off-line condition for a period of time for the purpose selected from the group consisting of updating firmware, diagnostic tests, unit replacement, and unit reset.

3. The method of claim 1, wherein the redundant data storage system is selected from the group consisting of RAID 1, RAID 3 and RAID 5.

4. The method of claim 1, wherein the logical volume comprises a plurality of disk drives.

5. The method of claim 1, wherein the logging repository comprises a disk drive.

6. The method of claim 1, wherein said step of the storing data directed to the logical volume in which the selected data storage unit is disposed in a logging repository disposed outside of the logical volume in which the selected data storage unit is disposed, and said step of allowing data directed to the logical volume in which the selected data storage unit is disposed to be stored in the logical volume in which the selected data storage unit is disposed are achieved using the volume/drive manager of said redundant data storage system.

7. A method for updating firmware in a selected data storage unit in a redundant data storage system having a plurality of data storage units disposed in at least one logical volume, where a second data storage unit in the at least one logical volume in which the selected data storage unit is disposed has failed, comprising:

downloading firmware onto the selected data storage unit;
storing data directed to the at least one logical volume in which the selected data storage unit is disposed in a logging facility outside of the at least one logical volume in which the selected data storage unit is disposed during said step of downloading firmware;
downloading data stored in the logging facility onto the selected data storage unit following said step of downloading firmware; and
updating redundant data in the at least one logical volume in which the selected data storage unit is disposed.

8. The method of claim 7, wherein the redundant data storage system is selected from the group consisting of RAID 1, RAID 3 and RAID 5.

9. The method of claim 7, wherein the logical volume comprises a plurality of disk drives.

10. The method of claim 7, wherein the logging facility comprises a data storage unit adapted to store data directed to the logical volume in which the selected data storage unit is disposed during said step of downloading firmware.

11. An apparatus for downloading firmware on a selected data storage unit disposed in a redundant data storage system having a plurality of data storage units disposed in at least one logical volume, comprising in combination:

5 (a) means for downloading firmware onto a selected data storage unit from said plurality of data storage units in said at least one logical volume;

(b) a logging facility for storing data directed to said at least one logical volume in which said selected data storage unit is disposed during the firmware download, said logging repository being
10 located outside of said at least one logical volume;

(c) means for detecting a failure in a data storage unit which has not been selected in said at least one logical volume;

(d) means for downloading data stored in said logging facility onto
15 said selected data storage unit; and

(e) means for updating the redundant data in said data storage system.

12. The apparatus of claim 11, wherein said redundant data storage system is selected from the group consisting of RAID 1, RAID 3 and RAID 5.

13. The method of claim 11, wherein said logical volume comprises a plurality of disk drives.

14. The method of claim 11, wherein said logging facility comprises a data storage unit adapted to store data directed to said at least one logical volume in which said selected data storage unit is disposed during the firmware download.